REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

Claim 34 is currently being amended.

In the Advisory Action of October 8, 2004, the Examiner upheld her previous rejections of claims 1-3, 7, 19-23, 27, 32-35, 39-41 and 57-64 under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,503,771, issued to Staley et al.[1] In making these rejections, the Examiner has made a number of inaccurate assumptions and statements which are neither supported by the law nor the prior art upon which the Examiner is relying. Each of these issues are discussed below.

First, the Examiner has continued to cite the Staley et al. reference against the above-referenced claims despite the fact that this reference has absolutely no applicability to the present invention. The Staley et. al. reference is completely unrelated to the tissue augmentation material of the present invention. The "Background of the Invention" of the Staley et al. reference is clear that this particular reference relates to the "production of formed articles such as engine components and superconductive composites" and not tissue augmentation materials. The Staley et al. reference never makes a single mention of tissue augmentation, nor does it ever refer to the injection or implantation of the material into a live body of any sort. In fact, the Background of the Invention makes clear that the Staley et al. reference is directed to the manufacture of engine components, not to tissue augmentation.

Every one of the currently rejected claims, on the other hand, specifically claims and refers to either a tissue augmentation material or a biocompatible composition for augmenting

[1] The Examiner made a number of rejections under 35 U.S.C. § 112, second paragraph. The Examiner also objected to several other claims for various reasons. However, these issues were fully addressed in Applicants' September 13, 2004 Amendment After Final Rejection. These amendments were acknowledged in Advisory Action issued on October 8, 2004.

tissue. This feature has been consistently ignored by the Examiner when citing the Staley et al. reference.

In ignoring the features and relevance of tissue augmentation in the present claims, the Examiner has apparently concluded that the discussion of tissue augmentation in the preamble of the respective claims is not entitled to any weight. This position is incorrect as a matter of law. The Federal Circuit has repeatedly held that the preamble provides patentable weight and limits the scope of the claimed invention "when they give meaning to the claim and properly define the invention." *In re Paulson*, 30 F.3d 1475, 1479 (Fed. Cir. 1994) (internal citations omitted). The Federal Circuit has also emphasized that "when the claim drafter chooses to use *both* the preamble and the body to define the subject matter of the claimed invention, the invention is so defined, and not some other, is the one the patent protects." *Bell Communications Research, Inc. v. Vitalink Communications Corp.*, 55 F.3d 615, 620 (Fed. Cir. 1995).

In the present application, currently rejected claims are replete with such references to tissue augmentation both within the preamble and the body of the claims. (*See, e.g.*, claims 1, 21, 41), showing that there is a clear intention to define the invention in terms of tissue augmentation. In this regard, the current application is similar to the situation presented in *Poly-America, L.P. v. GSE Lining Technology, Inc.*, 383 F.3d (Fed. Cir. 2004). In *Poly America*, the Federal Circuit held that the preamble phrase "blown-film" was a substantive limitation of the patent claims at issue, substantially differentiating the claims over the prior art. In making this determination, the court noted that the specification of the patent-at-issue was "replete with references to the invention as a 'blown-film' liner, including the title of the patent itself and the 'Summary of the Invention,'" while also noting that the phrase was also used repeatedly to describe the preferred embodiments, showing that this feature did not state a purpose or intended use, but instead disclosed an important feature of the claimed invention. *Id. at 1310.* An almost identical situation is presented in the currently rejected claims. The title of the present application ("Tissue Augmentation Material and Method"), the Field of the Invention, the Background of the Invention, the Summary of the Invention, and the Detailed Description of the

Preferred Embodiments refer specifically to tissue augmentation no less than fourteen times, providing clear evidence under *Poly America* that the feature of "tissue augmentation" is entitled to be given patentable weight.

Furthermore, the Federal Circuit has also emphasized that dependence upon a preamble phrase for antecedent basis purposes may limit a claim's scope because it indicates a reliance on the preamble and the body to define the invention. *Eaton corp. v. Rockwell Int'l Corp.*, 323 F.3d 1332, 1339 (Fed. Cir. 2003); *Catalina Mktg. Int'l v. Coolsavings.com, Inc.*, 289 F.3d 801, 808 (Fed. Cir. 2002). In this case, independent claim 1 clearly refers to the tissue augmentation material in both the body and the preamble, providing yet another clear indication that the feature of a tissue augmentation material is to be given patentable weight.

In addition, the Federal Circuit has also noted that, when a preamble is relied upon during prosecution to distinguish a claimed invention over the prior art, the preamble is transformed into a claim limitation because such reliance indicates the use of the preamble to define, in part, the claimed invention. *Catalina* at 808-809 (citing *Bristol-Myers Squibb Co. v. Ben Venue Labs, Inc.*, 246 F.3d 1368, 1375 (Fed. Cir. 2001)). In Applicants' May 4, 2004 Amendment and Reply, this type of argument was made and was accepted by the Examiner:

> None of the references cited by the Examiner disclose a tissue augmentation material or a biocompatible composition for augmenting tissue, wherein the biomaterial is homogeneously suspended in the carrier both prior to and during the introduction of the composition to a tissue site. Both the Ammann et al. patent and the Hisatuka et al. patent completely fail to disclose, teach or even suggest the homogeneous or uniform suspension of a biomaterial in a gel carrier. In fact, the Hisatuka et al. patent does not even hint at the use of polysaccharide gels in tissue augmentation, which is the focus of the currently pending claims. Regarding the Staley and Chibata et al. patents, neither of these references discloses a biomaterial being homogeneously suspended in a carrier both before and during the introduction of the material into a tissue site, as is specifically required by the claims. The Chibata et al. patent is also completely unrelated to tissue augmentation.

In response to these arguments, the Examiner withdrew all of her rejections based upon all of the cited references except for the Staley et al. reference. Importantly, the Examiner also did not dispute Applicants' position regarding the importance of tissue augmentation in her next communication. These actions fully support the position that the preamble language of a preamble language of a tissue augmentation material has been intended to carry patentable weight.

Given Applicants' clear position that the feature of tissue augmentation is a patentable feature of the currently rejected claims, the Examiner's rejection of these claims cannot stand. As mentioned previously, the Staley et al. reference does not teach, disclose or even suggest a tissue augmentation material of the type described in the pending claims. The Staley et al. reference is instead directed to a completely unrelated field, namely the manufacture of engine components. Furthermore, the Examiner cannot point a single location in the Staley et al. reference that would motivate one skilled in the art of tissue augmentation to even consider the Staley et al. reference as relevant prior art. Because the Staley et al. reference does not teach, disclose or suggest a tissue augmentation material, Applicants respectfully submit that the currently rejected claims are patentable over the Staley et al. reference.

Second, in rejecting claims 1, 19, 20, 21, 39, 40 and 41, the Examiner has admitted that the Staley et al. reference does not "specifically teach gel viscosities in the range of 20,000 to 350,000 centipoise." However the Examiner has instead placed the burden on the Applicants to prove that the prior art does not disclose this viscosity range, essentially blaming the Applicants for "failing to provide guidance regarding concentrations of all possible polysaccharides which would result in viscosities in the range of 20,000 to 350,000" centipoises. Along the same lines, and without any supporting evidence, the Examiner has summarily declared that "any carboxymethylcellulose gel with weight % concentration between 0.25 and 5% will be considered as possessing viscosity in the range of 20,000 to 350,000 centipoise." Furthermore, the Examiner has taken the position that "for all other polysaccharides...any concentration of the polysaccharide will be considered as fulfilling the viscosity requirement."

In response to this position, Applicants respectfully assert that the Examiner's position is completely unsupported by what is presented in the present application, what is discussed in the Staley et al. reference, and what is commonly known in the relevant art. Pages 26 and 27 of the present application make it clear that it is indeed possible for sodium methylcellulose gels to have viscosities outside of a 20,000-350,000 centipoise range. In particular, it is clear that the present invention is directed to this specific range because "[i]t has been found that with gel viscosities below about 20,000 centipoise the particles may not remain in suspension, and with gel viscosities above about 350,000 centipoise, the gel may become too viscous for convenient mixing." This sentence clearly shows that this specific viscosity range was chosen for a specific purpose. Second, it is very well known in the art that viscosities of polysaccharide-containing gels cannot be determined based solely upon the weight percentage of a particular component. Instead, one must look at the ratios and viscosities of each of the individual components. For example, page 27 of the present application notes that, in one embodiment of the present invention, the sodium metylcellulose that is used should have a viscosity of about 1000 to 4000 centipoise. This range of viscosities shows that, for this particular component, the viscosity can vary significantly, and this variance will inherently affect the viscosity of the resulting gel.

Furthermore, the United States Patent Office records are replete with patents and published applications showing polysaccharide gels of the described concentration range where the resulting composition has a viscosity well outside of the 20,000-350,000 centipoise range. For example, U.S. Published Application No. 2001/0003222 clearly discusses the use of a dye having preferably 2% by weight of a thickener such as sodium carboxymethylcellulose, where the dye has a viscosity of preferably as low as two centipoise, well outside of the 1000-4000 centipoise range discussed in the present application for one embodiment of the invention. *See* ¶21. This reference clearly demonstrates that one cannot simply assume a given viscosity given the weight percentage of a single component.

With regard to non-sodium carboxymethylcellulose polysaccharides, there are several other references that discuss gels having a viscosity outside of the specified range. For example

only, Published U.S. Application No. 2004/0224144 clearly discusses the use of carrageenans, alginates, and carboxymethylcellulose gums being used as a thickening agent in a solution having an ultimate viscosity of as low as 2500 centipoise, even when the thickening agent provides between .5 and 2% of the total solution. *See* ¶¶ 41, 43. This is further evidence that it is wholly improper for the Examiner to "assume" that any polysaccharide gel in the prior art anticipates a claim having a specific viscosity range.

In addition to the above, the Staley et al. reference itself completely undercuts the Examiner's position that any prior art polysaccharide gel anticipates gels having the cited viscosity range. In particular, column 5, lines 57-64 clearly and unambiguously states:

> The suspensions prepared by the present method have a pourable viscosity to enable introduction of the suspension into a mold to produce a formed article. Thus the method is well suited for use in injection molding processes. As used herein, the term "pourable viscosity" refers to viscosities of less than 5,000 centipoise (cp), and more preferably to less than 1,000 cp, and still more preferably to less than about 500 cp, when measured at a shear rate of 9.2 s.sup.-1.

This passage, which comes from the exact same prior art reference which is relied upon by the Examiner, is crystal clear in showing that one cannot make the assumptions that have been made by the Examiner.

In light of the clear refutation of the Examiner's position concerning applicable viscosity ranges, the Examiner's rejections based upon the Staley et al. reference cannot stand. As admitted by the Examiner the Staley et al. reference does not disclose a tissue augmentation material having a viscosity between about 20,000 centipoise to about 350,000 centipoise. Furthermore, every reference to viscosity within the Staley et al. patent refers to a viscosity significantly below the minimum threshold of about 20,000 centipoise of the currently rejected claims. As discussed above, the Staley et al. reference is unambiguous in requiring a "pourable viscosity" of less than 5,000 centipoise, and preferably less than 500 centipoise. Furthermore, the Examples presented in the Staley et al. reference discusses suspensions from as low as 5

centipoise (Example 3) to as high as 3,720 centipoise (Example 1). However, the Staley et al. reference clearly does not disclose a specific, higher viscosity range of about 20,000 to about 350,000 centipoise. Instead, the reference consistently teaches away from it by encouraging the use of products having significantly lower viscosities. For all of these reasons, Applicants respectfully submit that the Staley et al. reference does not teach the use of a suspension having a viscosity of between about 20,000 and about 350,000 centipoise.

Third, the August 17, 2004 Official Action included other assumptions in the "Claim Intepretation" Section that require clarification. For example, the Examiner took the position that spherical ceramic particles inherently are substantially non-resorbable. This statement is incorrect. As an example of this fact, Applicants have attached a copy of an Abstract of an article entitled "Resorbable and Nonresorbable Hydroxyapatite Granules as Bone Graft Substitutes in Rabbit Cortical Defects." This document clearly and unequivocally shows that such ceramic particles can be both resorbable and non-resorbable. The Examiner is therefore not permitted to assume that any such particle is non-resorbable.

The Examiner also claimed that all polysaccharide gels are inherently biocompatible. This statement is incorrect as well. As an example only, the Examiner is directed to the attached article entitled "A Poison Capsule Defense" from the January 11, 2002 edition of Science Magazine. This article clearly discusses the production of a toxic polysaccharide, which is clearly not biocompatible.

Still further, the Examiner has asserted that all polysaccharide gels are lubricous, which ordinarily means having a slippery or smooth quality. However, there are a wide variety of polysaccharide gels which are not commonly thought of as being lubricous. As an example, starch, a basic polysaccharide, becomes quite sticky (the opposite of slippery) and can possess significant binding qualities when hydrated, which is why starch is commonly used a glue. One therefore cannot assume that all polysaccharides are lubricious.

Furthermore, the Examiner has stated that Applicants have not defined the term "biomaterial" and therefore the Examiner considers biomaterial to be any material. The Examiner has once again placed upon the Applicants a burden to define each word used to describe the invention. Applicants are particularly perplexed given that the Examiner's supervisor stated that if Applicants added the term "biomaterial" to the claims then the phrase would have structural characteristics and not simply be considered to be an intended use.[2] Obviously the Examiner's Supervisor understood the term "biomaterial" to impart some limitation. The Applicants are not required to define each and every term used to describe there invention, but may instead rely on the plain meaning and knowledge of one of ordinary skill in the art.

The Examiner has made several other assumptions and statements regarding various claim terms. Applicants fully reserve the right to address each of these assumptions in a later filing in the present application or with regard to new claims in this or a later-filed application.

Fourth, and with regard to claim 34, the Examiner has taken the position that because the ceramic particles identified in the Staley et al. reference describe only a single dimension for the particles, they are inherently spherical. The position is factually incorrect. Both dictionary definition and geometric definitions clearly demonstrate that, even when an object is referred to as having a diameter, the object can take a variety of forms. For example, Merriam-Webster's Collegiate Dictionary (10th Ed. 1996), defines "diameter" as "a chord passing through the center of a figure or body" and "the length of a straight line through the center of an object." Similar definitions can also be found in Webster's New Collegiate Dictionary (1981), for example. Furthermore, at least two basic geometric objects, namely as cylinders and cones, both have a defined diameter yet are not spherical. Still further, several of the prior art references cited by Applicants also refer to particles using a single dimension yet are clearly not spherical. For example, the Background of the Invention for the present application states:

[2] *See* May 5, 2004 Amendment and Reply Under 37 C.F.R. § 1.111, Page 10, lines 6-10.

> R. A. Appell, "The Artificial urinary Sphincter and Periurethral Injections", Obstetrics and Gynecology Report. Vol. 2, No. 3, pp. 334-342, (1990), is a survey article disclosing various means of treating urethral sphincteric incompetence, including the use of injectables such as polytetrafluoroethylene micropolymer particles of about 4 to 100 microns in size in irregular shapes, with glycerin and polysorbate. (emphasis added) (Page 5, lines 4-12)

This is further evidence that reference to a single dimension does not require that an object be spherical. For all of these reasons, the mere recitation of a "diameter" does not inherently mean that a particle is a sphere, and Applicants submit that it is wholly improper for the Examiner to make such an assumption without additional supporting evidence.

The Examiner also has summarily declared that the Staley et al. reference teaches that metal and ceramic particles are inherently smooth and rounded.[3] This statement also is incorrect. First, there is absolutely no place in the Staley et al. reference where this assertion is made, and the Examiner points to no particular location in the reference for this support. Second, much of the prior art previously addressed in related patent applications disclosed non-smooth and non-rounded ceramic particles, refuting the Examiner's position. For example, Page 4 of the present application refers to an article by Misiek et al. entitled "Soft Tissue Responses to Hydroxylapatite Particles of Different Shapes" which "discloses that the implantation of hydroxylapatite in the form of sharp edged particles or rounded particles in the buccal soft tissue pouches produced inflammatory response at the implant sites with both particle shapes." (emphasis added) (*See* Page 4, lines 9-16). This is just one example demonstrating that such particles are not necessarily smooth and rounded.

In an Advisory Action dated October 8, 2004, the Examiner commented that "even if the ceramic particles of Staley do not anticipate the limitations describing the particles, Staley also teaches spherical metal particles, which certainly do not have sharp or angular edges." This statement is both incorrect and irrelevant. First of all, in no location of the Staley reference is

[3] Claim 34 previously did not mention the particles as being smooth. However, Applicants have amended claim 34 to now include this limitation.

there a teaching of a spherical metal particle, and the Examiner has completely failed to provide such support. As mentioned above, a reference to a single dimension does not inherently mean that an object is spherical, and in no other location of the reference is there even a hint of a spherical particle. Second, the teachings of the Staley et al. reference with regard to metal particles is completely irrelevant with regarding to claim 34, because claim 34 is directed to ceramic particles, not metallic particles.

Also in the October 8, 2004 Advisory Action, the Examiner attempted to uphold the rejection of claim 34 by stating that Applicants failed to define what constitutes a sharp and angular edge. In response to this rejection, Applicants once again direct the Examiner to the decision by the Board of Patent Appeals and Interferences dated July 26, 2001 for Interference No. 103,570. In particular, page 7 of the decision clearly shows that the Board fully considered Applicants' definition of the terms "rounded" or "smooth, rounded" and had no difficulty understanding the meaning of Applicants' definition while upholding the patentability of this feature. Applicants find it surprising that the Examiner has such difficulty with this term, particularly when the three-member Board did not have any difficulty with this definition.

For all of the above reasons, Applicants submit that the rejection of claim 34 is overcome.

In light of the number of issues that have been addressed in this Reply, Applicants believe that a telephonic or in-person interview may be beneficial to the final resolution of this matter. Therefore, Applicants respectfully request that the Examiner and the Examiner's supervisor contact the Attorneys for Applicants directly before any new Action is issued.

Applicants believe that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 06-1450. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 06-1450. If any extensions of time are needed for timely acceptance of papers submitted herewith, Applicants hereby petition for such extension under 37 C.F.R. §1.136 and authorizes payment of any such extensions fees to Deposit Account No. 06-1450.

Respectfully submitted,

Date January 18, 2005

By _____

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1: Clin Implant Dent Relat Res. 2003;5(2):95-101.

BC Decker online

Resorbable and nonresorbable hydroxyapatite granules as bone graft substitutes in rabbit cortical defects.

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Department of Biomaterials, Institute for Surgical Sciences, Gothenburg University, Gothenburg, Sweden. elisabeth.liljensten@artimplant.se

BACKGROUND: The use of various synthetic calcium phosphate compositions for the promotion of bone in bone defects is of potential interest because such materials may be tailor made and may bond to bone. There is yet an inadequate knowledge of the role of calcium phosphate composition and resorbability for the bone response. PURPOSE: The aim of the present study was to compare the ability of resorbable versus nonresorbable hydroxyapatite (HA) granules to promote new bone formation in cortical bone defects. Resorbable and nonresorbable HA granules, used as bone graft substitutes, were evaluated after 6 weeks and 3 months in the rabbit tibia. Circular defects (diameter 5.0 mm) were made in both tibias of 18 New Zealand white rabbits. The 36 defects were divided into three groups (six observations per group and time, respectively). The first group was augmented with resorbable HA granules, the second group was augmented with ceramic nonresorbable HA granules, and the third group was left without augmentation (control). The animals were killed after 6 weeks and 3 months, and the tissue was evaluated with light microscopic (LM) morphology and morphometry, scanning electron microscopy (SEM), and energy dispersive x-ray analysis (EDX). RESULTS: After 3 months LM morphometry revealed significantly more newly formed bone in the two HA augmented groups compared with that in the control. A close contact was found between both kinds of HA granules and new bone as viewed with light microscopy and SEM. A relatively slow degradation process was indicated by the small reduction of the total granule area in the cortical defects. However, LM observations showed a change of granule form. Pilot experiments using SEM-EDX indicate that Ca and P contents had decreased in the resorbable HA granules between 6 weeks and 3 months. Further, a higher content of Ca and P was found in the newly formed bone close to granules, in comparison with more distant newly formed bone. CONCLUSIONS: Our results suggest that both resorbable and nonresorbable HA granules promote new bone formation in rabbit

cortical defects, which does not occur in control defects.

PMID: 14536044 [PubMed - indexed for MEDLINE]

EDITORS' CHOICE

edited by Gilbert Chin

OCEANOGRAPHY

Aqueous, not Aeolus

During glacial periods, the productivity in the Southern Ocean rises. This increase has been attributed to the greater availability of iron, which serves to fertilize the Southern Ocean. By drawing carbon dioxide from the atmosphere, the increased productivity feeds back positively, leading to an even cooler climate. According to the "iron hypothesis," the iron is delivered via dust blown into the ocean from arid regions, and Antarctic ice cores do indeed show more dust during glacial periods.

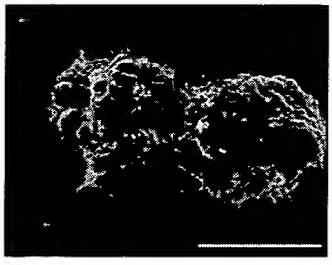
Latimer and Filippelli now offer evidence for a different source of the all-important iron. They have analyzed sediment cores from the South Atlantic and southern Indian Oceans to determine changes in sediment fluxes and productivity. During glacial times, productivity and iron fluxes are indeed higher, but most of the iron does not originate from eolian (wind-borne) dust. Rather, it is attributed to substantially increased weathering and delivery of material from continental shelves, indicating that increases in productivity may have been fueled by upwelling. Therefore, eolian iron might have constituted a much smaller contribution than previously proposed. — JU

Paleoceanography, 10.1029/2000PA000586.

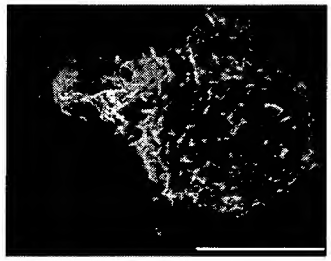
MICROBIOLOGY

A Poison Capsule Defense

The soil fungus *Cryptococcus neoformans* can enter and persist within human macrophages, causing virulent infections if the person becomes immunocompromised. This fungus need not infect a vertebrate in order to complete its life cycle, so its pathogenicity is puzzling. A clue to its virulence may come from its life in soil, where predatory microorganisms, such as amoebas, are present.



Steenbergen *et al.* have discovered remarkable parallels between the defensive strategies used by *C. neoformans* when eaten by *Acanthamoeba castellani* and when surviving in human cells. Amoebas ingest the fungal cells, but the cells remain within vacuoles and produce a toxic polysaccharide, as they do when residing within macrophage vacuoles. The engulfed fungus possesses other unfriendly characteristics also exhibited during macrophage infection, and it ultimately kills its host amoeba, whose death releases vital nutrients. Other soil fungi, such as *Histoplasma capsulatum*, that cause potentially fatal human infections are probably similarly armed because they, too, must run the gauntlet of voracious amoebas. — CA



Amoebas (yellow) ingesting capsular *Cryptococcus* (red); bars, 10 μm.

Proc. Natl. Acad. Sci. U.S.A. **98**, 15245 (2001).

PLANT SCIENCE

Early Decision Program

The initial cell division of the plant zygote produces an asymmetric outcome: the apical cell, from which most of the plant develops, and the larger basal cell that in part forms the suspensor, an embryonic tissue that anchors the developing embryo. Suspensor cells in the scarlet runner bean are particularly large and amenable to microdissection, and Weterings *et al.* have been able to identify two messenger RNAs that are specific to the suspensor cells and a third that is enriched in suspensor cells. These transcripts were not detected in the egg, but their asymmetric expression was apparent as early as the four-cell stage and may lead to clues about the molecular signals that establish the initial embryonic asymmetry. — PJH

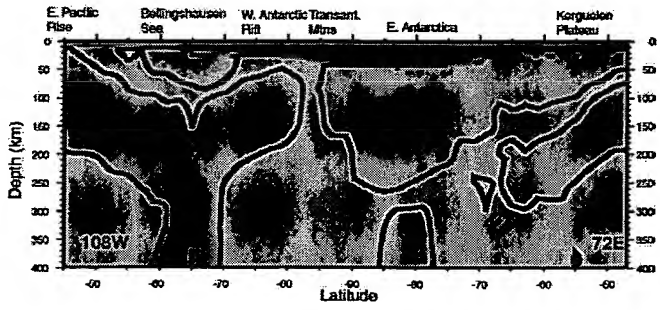
Plant Cell **13**, 2409 (2001).

GEOPHYSICS

Reporting from the West Antarctic Rift

Our knowledge of the crust and upper mantle that lie under Earth's continents is poorest in the Southern Hemisphere, particularly beneath Antarctica. This region is important tectonically because Antarctica contains major crustal provinces and because rifting around Antarctica was instrumental in the formation of all of the major ocean basins. Recent volcanism and rifting may also be influencing the stability of the major ice sheets there.

Ritzwoller *et al.* have produced a new tomographic map of the upper mantle structure beneath Antarctica and the Southern Ocean using surface wave velocities. Their model implies that the mantle beneath eastern Antarctica transmits seismic waves rapidly (or is "fast") and thus is probably relatively cold and stiff. In contrast, the mantle beneath western Antarctica is "slower," and thus hotter, although not as slow as the regions at active, spreading ridges. This map is consistent with the presence of ongoing volcanism within a dormant rift zone. — BH



A west-east slice into Earth's interior (blue, fast; red, slow).

J. Geophys. Res., 10.1029/2001JB000179.

CHEMISTRY

Maintaining Mechanism

The replacement of volatile organic solvents with ionic liquids would reduce emissions of chemicals into the environment as well as promote energy-efficient separations. One concern, however, is that solvent interactions in an ionic medium may alter the mechanism (and hence the outcome) of classical organic reactions. Csihony *et al.* examined one workhorse reaction, the Friedel-Crafts acetylation of benzene, in an ionic liquid,

CONTINUED ON PAGE 237

CREDITS: (ABOVE) STEENBERGEN *ET AL., PROC. NATL. ACAD. SCI. U.S.A.* **98**, 15245 (2001); (BELOW) RITZWOLLER *ET AL., J. GEOPHYS. RES.*, 10.1029/2001JB000179

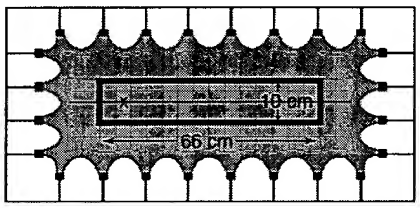
1-butyl-3-methylimidazolium chloride, with in situ infrared spectroscopy. They observed a temporal and spectral concordance of absorption bands associated with the expected intermediates for this reaction, such as the acetylium ion CH_3CO^+ in complex with the $AlCl_4^-$ catalyst, for both the ionic solvent and a conventional organic solvent, 1,2-dichloroethane. — PDS

Green Chem. **3**, 307 (2001).

MATERIALS SCIENCE

Bursting the Balloon

When a crack propagates through a solid, it typically takes a straight-line path, as this requires the least amount of work from the system. However, when a balloon is popped, it shatters into fragments that have wavy patterned edges. Deegan *et al.* have constructed an apparatus to study crack propagation in a controlled manner. A series of notches are cut into a rectangular sheet of rubber, and these are annealed to prevent fracture at these points. The projecting tabs are clamped, and the sample is then stretched in both directions, with the greater tension in the short direction of the sheet. Piercing the rubber with a pin generates a crack that propagates along the long direction. At low strains there is an initial kink in the crack, but usually it straightens, following the centerline of the sample. Above a critical strain, the crack oscillates



The strained rubber sheet.

around the centerline with a wavelength that depends on the strain values in both directions. The authors rule out stress-induced crystallization of the rubber and out-of-plane motions as the cause of the instability, and instead show that it can be characterized as a Hopf bifurcation. — MSL

Phys. Rev. Lett. **88**, 014304 (2002).

ECOLOGY

The Decline of the Albatross

Populations of the wandering albatross species in the Southern Ocean have been declining for several decades. Commercial longline fishing for tuna ("by-catch") has been implicated in this decline; albatrosses often attempt to remove bait from fishing lines, the unsuccessful ones becoming entrapped themselves. However, because of the vast distances covered by albatrosses while foraging, it has proved difficult to establish the quantitative relationship between the distribution of longline fishing and albatross foraging.

Tuck *et al.* adopt a modeling approach to assess the impact of fishery by-catches on albatross populations, using 30-year data sets on albatross populations at two important breeding sites and parallel reported data on fishing activities in albatross foraging areas. The resulting simulations of albatross population dynamics appear to confirm a substantial impact of by-catch on one of the study populations (Crozet Islands), but indicate a less definite link with the observed population declines at the other (South Georgia). These models allow the integration of demographic and fishing data in a way that is impossible to achieve through direct observation, and, when developed further, will help to pinpoint regulatory and conservation priorities for the Southern Ocean. — AMS

J. Appl. Ecol. **38**, 1182 (2001).

GENETICS

Contextual Analysis

Dopamine is a biogenic amine that functions as a neurotransmitter in central systems underlying behavior. Disturbances in dopaminergic pathways occur in many mental disorders, and the 7R allele of the human dopamine receptor gene *DRD4* has been associated with an elevated incidence of attention-deficit/hyperactivity disorder (ADHD). The 7R allele is one of many such alleles (2R-11R), all of which appear to contain integral multiples of a 48–base pair segment, with single-nucleotide polymorphisms in some of the tandem repeats.

Having sequenced and analyzed 600 *DRD4* alleles from a global sample, Ding *et al.* propose that the most common 2R-6R alleles all derive from single mutation or recombination events operating on an ancestral 4R allele. In contrast, the 7R allele, which itself could give rise to some of the less frequent alleles (5R-8R), would have required a series of at least four mutations and gene conversions. Further analysis suggests that the 7R allele may first have appeared about 40,000 years ago and subsequently been maintained due to positive selective pressure applied by the social and environmental conditions encountered during that watershed period, presumed to differ considerably from the present-day classroom where ADHD is found. — GJC

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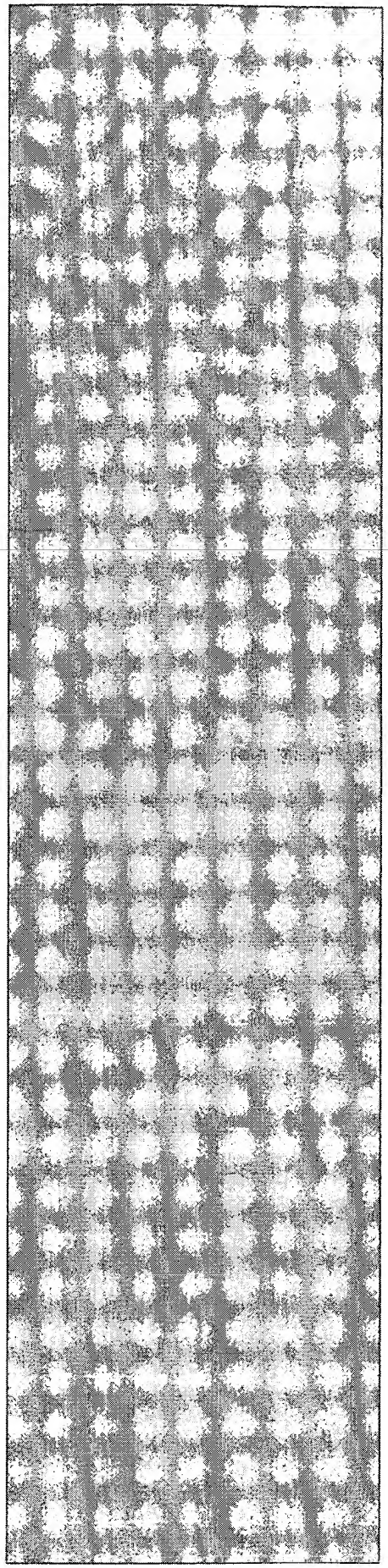

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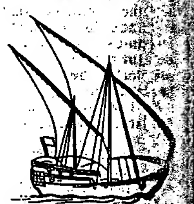
Abbreviations a

ning clockwise or toward the right; *esp* :
on of light toward the right ⟨~ crystals⟩
-ˌstrōz\ *n* (ca. 1869) : dextrorotatory glu
: *dayı*, lit., maternal uncle] (1659) : a rul
npire in northern Africa
) : DESIGNATED HITTER
\ *vi* **DH–d; DH–ing** (1975) : to play
r
-\ *n* [Skt; akin to L *firmus* firm] (1796)
s duty fulfilled by observance of custom
m : **a** : the basic principles of cosmic or
aw **b** : conformity to one's duty and na

-\ *n* [Hindi *dharnā*, fr. Skt *dharana* s
: firm] (1747) : a fast held at the door
ppeal for justice
r. Kannada *tōla* wolf] (ca. 1827) : a wi
ng from India to southern Siberia
otis [Hindi *dhotī*] (1614) : a loincloth
ndia
va] (1785) : an Arab
having a long over-
oop, and a low waist
-(ˌ)jä, ˌthül-\ *n* [Ar
ne of the pilgrimage]
month of the Islamic

(ˌ)dä\ *n* [Ar *Dhū-l*
he sitting] (ca. 1771)
e Islamic year — see

-ē\ *n* [Hindi *darī*]
oven cotton or wool
dia
. MF, fr. L, fr. Gk;
: twice : twofold
2 : containing two atoms, radicals, or


dhow

3, fr. OF, fr. L, fr. Gk, through, apart,
h ⟨*diapositive*⟩ : across ⟨*diadromous*⟩
[F, prob. fr. Gk *diabasis* act of crossing ov
: fr. *dia-* + *bainein* to go — more at COM
RITE **2** *chiefly Brit* : an altered basalt
e composition of gabbro but with an
ˌdī-ə-ˈbā-sik\ *adj*
z, -ˈbē-təs\ *n* [L, fr. Gk *diabētēs* diabe
to walk with the legs apart, cross over]
mal conditions characterized by the secr
ve amounts of urine; *esp* : DIABETES MELLI
-in-ˈsi-pə-dəs\ *n* [NL, lit., bland diabetes]
e pituitary gland characterized by intense
large amounts of urine
ne-lə-təs\ *n* [NL, lit., honey-sweet diabetes]
rder of carbohydrate metabolism caused
ry and environmental factors and usu. ch
secretion or utilization of insulin, by exce
cessive amounts of sugar in the blood and
nd loss of weight
\ *adj* (1799) **1** : of or relating to diabet
with diabetes **3** : occurring in or caus
suitable for diabetics ⟨~ food⟩
rson affected with diabetes
ˌbe-tə-ˈje-nik, -ˌbē-\ *adj* (ca. 1903) : prod

-(ˌ)be-ˈtä-lə-jist, -ˌbē-\ *n* (1970) : a special

)rē, -ˈa-blə-\ *n* [F, fr. OF, fr. *diable* devil,
IL] (1751) **1** : black magic : SORCERY **2**
or pictures of black magic or of dealings
e **3** : mischievous conduct or manner
li-kəl\ *or* **di·a·bol·ic** \-ˈbä-lik\ *adj* [ME
. LL *diabolicus*, fr. *diabolus*] (14c) : of, rel
the devil : DEVILISH — **di·a·bol·i·cal·ly**
i·cal·ness \-li-kəl-nəs\ *n*
i-zəm\ *n* (1614) **1** : dealings with or
elief in or worship of devils **3** : evil char
st \-list\ *n*
zed; -liz·ing (1702) : to represent as or

nik\ *adj* (1927) : of, relating to, or dealing
age or culture) as they occur or change ov
ron·i·cal·ly \-ˈkrä-ni-k(ə-)lē\ *adv*
nē\ *n* [ISV *dia-* + *-chrony* (as in *synchr*
ic analysis **2** : change extending through
· di·acid·ic \ˌdī-ə-ˈsi-dik\ *adj* (1866) : abl
s of a monobasic acid or one of a dibasic
used esp. of bases
) : an acid with two acid hydrogen atoms
dē-\ *adj* [LL *diaconalis*, fr. *diaconus* deacon
11) : of or relating to a deacon or deacones
-ˌnāt\ *n* (ca. 1751) **1** : the office or perio
coness **2** : an official body of deacons
\ *n* (1866) : an accent near or through a
character or combination of characters in
ferent from that given the unmarked or o

-ti-kəl\ *also* **di·a·crit·ic** \-ˈkri-tik\ *adj*
diakrinein to distinguish, fr. *dia-* + *krinein*
TAIN] (1749) **1** : serving as a diacritic
nents in culture —S. F. Nadel⟩ **b** : capabl
of superior ~ powers⟩
-fəs\ *adj* [*di-* + *-adelphous*] (1807) : united
es — used of stamens

DIACRITICS

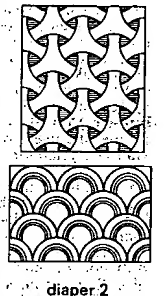
(é) acute accent	˘	(ŭ)	breve
(è) grave accent	ˇ	(č)	haček
(ô) *or* ~ *or* ~ circumflex	¨	(oö)	diaeresis
(ñ) tilde	¸	(ç)	cedilla
(ō) macron			

m \ˈdī-ə-ˌdem, -dəm\ *n* [ME *diademe*, fr. OF, fr. L *diadema*, fr. *dēma*, fr. *diadein* to bind around, fr. *dia-* + *dein* to bind; akin to *man* rope] (13c) **1 a** : CROWN 1; *specif* : a royal headband **b** N 6a(1) **2** : something that adorns like a crown
mous \dī-ˈa-drə-məs\ *adj* (ca. 1949) *of a fish* : migratory be- salt and fresh waters
sis \dī-ˈer-ə-səs, *Brit also* -ˈir-\ *n, pl* **-e·ses** \-ˌsēz\ [LL *diaeresis*, *diairesis*, lit., division, fr. *diairein* to divide, fr. *dia-* + *hairein* to (ca. 1611) **1** : a mark ¨ placed over a vowel to indicate that the is pronounced in a separate syllable (as in *naïve* or *Brontë*) **2** break in a verse caused by the coincidence of the end of a foot the end of a word — **di·ae·ret·ic** \ˌdī-ə-ˈre-tik\ *adj*
sis \ˌdī-ə-ˈje-nə-səs\ *n* [NL] (ca. 1886) **1** : recombination or gement of constituents (as of a chemical or mineral) resulting in product **2** : the conversion (as by compaction or chemical reac- of sediment into rock — **dia·ge·net·ic** \ˌdī-ə-jə-ˈne-tik\ *adj* — **net·i·cal·ly** \-ˈne-ti-k(ə-)lē\ *adv*
tro·pic \ˌdī-ə-ˌjē-ə-ˈtrō-pik, -ˈträ-pik\ *adj* (1880) : tending to at right angles to the line of gravity ⟨~ branches and roots⟩
ose \ˈdī-ig-ˌnōs, -ˌnōz, ˌdī-ig-ˈ, -əg-\ *vb* **-nosed; -nos·ing** [back- ion fr. *diagnosis*] *vt* (ca. 1859) **1 a** : to recognize (as a disease) and symptoms **b** : to diagnose a disease or condition in the patient⟩ **2** : to analyze the cause or nature of ⟨~ the m⟩ ~ *vi* : to make a diagnosis — **di·ag·nos·able** *or* **di·ag- able** \ˌdī-ig-ˈnō-sə-bəl, -əg-, -zə-\ *adj*
sis \ˌdī-ig-ˈnō-səs, -əg-\ *n, pl* **-no·ses** \-ˌsēz\ [NL, fr. Gk *diag-* fr. *diagignōskein* to distinguish, fr. *dia-* + *gignōskein* to know — at KNOW] (ca. 1681) **1 a** : the art or act of identifying a disease signs and symptoms **b** : the decision reached by diagnosis **2** technical description of a taxon **3 a** : investigation or of the cause or nature of a condition, situation, or problem ⟨~ ne trouble⟩ **b** : a statement or conclusion from such an analysis
tic \-ˈnäs-tik\ *also* **di·ag·nos·ti·cal** \-ti-kəl\ *adj* (1625) **1** relating to, or used in diagnosis **b** : using the methods of or a diagnosis **2** : serving to distinguish or identify — **di·ag- cal·ly** \-ti-k(ə-)lē\ *adv*
tic *n* (1625) **1** : the art or practice of diagnosis — often used **2** : a distinguishing mark — **di·ag·nos·ti·cian** \-(ˌ)näs-ˈti-shən\

nal \dī-ˈa-gə-nᵊl, -ˈag-nəl\ *adj* [L *diagonalis*, fr. Gk *diagōnios* angle to angle, fr. *dia-* + *gōnia* angle; akin to Gk *gony* knee — KNEE] (1563) **1 a** : joining two vertices of a rectilinear figure nonadjacent or two vertices of a polyhedral figure that are not same face **b** : passing through two nonadjacent edges of a poly- ⟨a ~ plane⟩ **2 a** : inclined obliquely from a reference line (as tical) ⟨wood with a ~ grain⟩ **b** : having diagonal markings or ⟨a ~ weave⟩
nal *n* (1571) **1** : a diagonal straight line or plane **2 a (1)** : a al direction **(2)** : a diagonal row, arrangement, or pattern **b** thing oriented in diagonal position **3** : a mark / used typically ote "or" (as in *and/or*), "and or" (as in *straggler/deserter*), or (as in *feet/second*) — called also *solidus*, *virgule* — **on the diag-** in an oblique direction : DIAGONALLY
nal·ize \-nə-ˌlīz\ *vt* **-ized; -iz·ing** (1942) : to put (a matrix) in with all the nonzero elements along the diagonal from upper left right — **di·ag·o·nal·iz·able** \-ˌlī-zə-bəl\ *adj* — **di·ag·o·nal-** \-ˌa-gə-nᵊl-ə-ˈzā-shən, -ˌag-nə-lə-ˈzā-\ *n*
nal·ly \dī-ˈa-gə-nᵊl-ē, -ˈag-nə-lē\ *adv* (1541) : in a diagonal

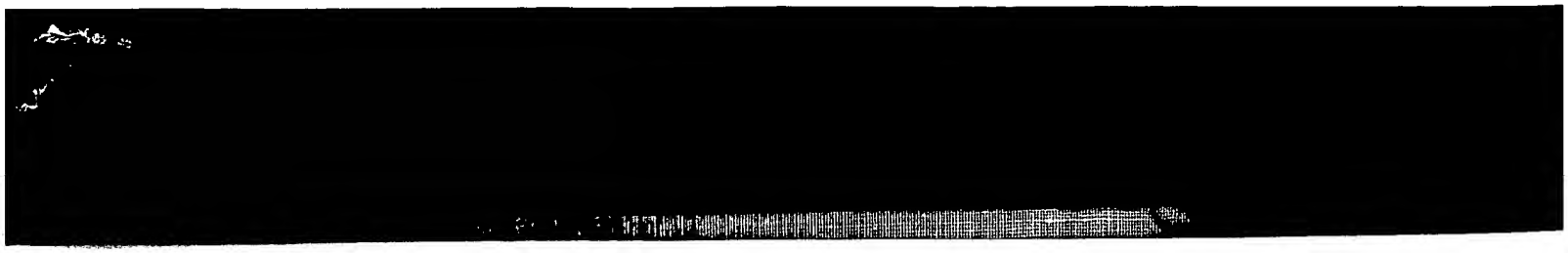
al matrix *n* (ca. 1928) : a diagonalized matrix
am \ˈdī-ə-ˌgram\ *n* [Gk *diagramma*, fr. *diagraphein* to mark out fr. *dia-* + *graphein* to write — more at CARVE] (1619) **1** : a design that explains rather than represents; *esp* : a drawing ows arrangement and relations (as of parts) **2** : a line drawing for mathematical or scientific purposes — **di·a·gram·ma·ble** mə-bəl\ *adj* — **di·a·gram·mat·ic** \ˌdī-ə-grə-ˈma-tik\ *also* **di·a- mat·i·cal** \-ˈma-ti-kəl\ *adj* — **di·a·gram·mat·i·cal·ly** \-ti- \ *adv*
m *vt* **-grammed** *or* **-gramed** \-ˌgramd\; **-gram·ming** *or* **-ing** \-ˌgra-miŋ\ (1840) : to represent by or put into the form of am
sis \ˌdī-ə-kə-ˈnē-səs, -(ˌ)ki-\ *n, pl* **-ne·ses** \-ˌsēz\ [NL] (ca. the final stage of the meiotic prophase marked by contraction bivalents
\ˈdī(-ə)l\ *n* [ME *dyal*, fr. ML *dialis* clock wheel revolving daily, fr. day — more at DEITY] (15c) **1** : the face of a sundial **2** *obs* IECE **3** : the graduated face of a timepiece **4 a** : a face upon some measurement is registered usu. by means of graduations pointer ⟨the thermometer ~ reads 70°F⟩ **b** : a device that may ated to make electrical connections or to regulate the operation chine ⟨a radio ~⟩ ⟨a telephone ~⟩
di·aled *or* **di·alled; di·al·ing** *or* **di·al·ling** *vt* (1821) **1** : to with a dial **2 a** : to manipulate a device (as a dial) so as to regulate, or select ⟨~ your favorite program⟩ ⟨~*ed* the wrong ⟩ **b** : CALL 1m(1) ⟨~*ed* the office⟩ ~ *vi* **1** : to manipulate a **2** : to make a telephone call or connection — **di·al·er** *n*
\ˈdī-ə-ˌlekt\ *n, often attrib* [MF *dialecte*, fr. L *dialectus*, fr. Gk conversation, dialect, fr. *dialegesthai* to converse — more at (1577) **1 a** : a regional variety of language distinguished by features of vocabulary, grammar, and pronunciation from other regional varieties and constituting together with them a single language ⟨the Doric ~ of ancient Greek⟩ **b** : one of two or more cognate languages ⟨French and Italian are Romance ~*s*⟩ **c** : a variety of a language used by the members of a group ⟨such ~*s* as politics and advertising —Philip Howard⟩ **d** : a variety of language whose identity is fixed by a factor other than geography (as social class) ⟨spoke a rough peasant ~⟩ **e** : REGISTER 4c **f** : a version of a computer programming language **2** : manner or means of expressing oneself : PHRASEOLOGY — **di·a·lec·tal** \ˌdī-ə-ˈlek-tᵊl\ *adj* — **di·a·lec·tal·ly** \-tᵊl-ē\ *adv*
dialect atlas *n* (1932) : LINGUISTIC ATLAS
dialect geography *n* (1929) : LINGUISTIC GEOGRAPHY
di·a·lec·tic \ˌdī-ə-ˈlek-tik\ *n* [ME *dialetik*, fr. MF *dialetique*, fr. L *dialectica*, fr. Gk *dialektikē*, fr. fem. of *dialektikos* of conversation, fr. *dialektos*] (14c) **1** : LOGIC 1a(1) **2 a** : discussion and reasoning by dialogue as a method of intellectual investigation; *specif* : the Socratic techniques of exposing false beliefs and eliciting truth **b** : the Platonic investigation of the eternal ideas **3** : the logic of fallacy **4 a** : the Hegelian process of change in which a concept or its realization passes over into and is preserved and fulfilled by its opposite; *also* : the critical investigation of this process **b (1)** *usu pl but sing or pl in constr* : development through the stages of thesis, antithesis, and synthesis in accordance with the laws of dialectical materialism **(2)** : the investigation of this process **(3)** : the theoretical application of this process esp. in the social sciences **5** *usu pl but sing or pl in constr* **a** : any systematic reasoning, exposition, or argument that juxtaposes opposed or contradictory ideas and usu. seeks to resolve their conflict **b** : an intellectual exchange of ideas **6** : the dialectical tension or opposition between two interacting forces or elements
di·a·lec·ti·cal \ˌdī-ə-ˈlek-ti-kəl\ *also* **di·a·lec·tic** \-tik\ *adj* (1548) **1 a** : of, relating to, or in accordance with dialectic ⟨~ method⟩ **b** : practicing, devoted to, or employing dialectic ⟨a ~ philosopher⟩ **2** : of, relating to, or characteristic of a dialect — **di·a·lec·ti·cal·ly** \-ti-k(ə-)lē\ *adv*
dialectical materialism *n* (1927) : the Marxist theory that maintains the material basis of a reality constantly changing in a dialectical process and the priority of matter over mind — compare HISTORICAL MATERIALISM
di·a·lec·ti·cian \ˌdī-ə-ˌlek-ˈti-shən\ *n* (ca. 1693) **1** : one who is skilled in or practices dialectic **2** : a student of dialects
di·a·lec·tol·o·gist \-ˈtä-lə-jist\ *n* (1883) : a specialist in dialectology
di·a·lec·tol·o·gy \-jē\ *n* [ISV] (ca. 1864) **1** : the systematic study of dialect **2** : the body of data available for study of a dialect — **di·a·lec·to·log·i·cal** \-ˌlek-tə-ˈlä-ji-kəl\ *adj* — **di·a·lec·to·log·i·cal·ly** \-k(ə-)lē\ *adv*
di·al·lel \ˈdī-ə-ˌlel\ *adj* [Gk *diallēlos* reciprocating, fr. *dia* through + *allēlōn* one another — more at ALLELO-] (1920) : relating to or being the crossing of each of several individuals with two or more others in order to determine the relative genetic contribution of each parent to specific characters in the offspring
di·a·log·ic \ˌdī-ə-ˈlä-jik\ *or* **di·a·log·i·cal** \-ji-kəl\ *adj* (1833) : of, relating to, or characterized by dialogue ⟨~ writing⟩ — **di·a·log·i·cal·ly** \-ji-k(ə-)lē\ *adv*
di·a·lo·gist \dī-ˈa-lə-jist; ˈdī-ə-ˌlō-gist, -ˌlä-\ *n* (ca. 1660) **1** : a writer of dialogues **2** : one who participates in a dialogue — **di·a·lo·gis·tic** \(ˌ)dī-ˌa-lə-ˈjis-tik; ˌdī-ə-ˌlō-ˈgis-, -ˌlä-ˈgis-\ *adj*
¹di·a·logue *also* **di·a·log** \ˈdī-ə-ˌlȯg, -ˌläg\ *n* [ME *dialoge*, fr. OF *dialogue*, fr. L *dialogus*, fr. Gk *dialogos*, fr. *dialegesthai* to converse, fr. *dia-* + *legein* to speak — more at LEGEND] (13c) **1** : a written composition in which two or more characters are represented as conversing **2 a** : a conversation between two or more persons; *also* : a similar exchange between a person and something else (as a computer) **b** : an exchange of ideas and opinions **c** : a discussion between representatives of parties to a conflict that is aimed at resolution **3** : the conversational element of literary or dramatic composition **4** : a musical composition for two or more parts suggestive of a conversation
²dialogue *vb* **-logued; -logu·ing** *vt* (1597) : to express in dialogue ~ *vi* : to take part in a dialogue
dial tone *n* (1923) : a tone emitted by a telephone as a signal that the system is ready for dialing
dial–up \ˈdī(-ə)l-ˌəp\ *adj* (1972) : relating to or being a standard telephone line used for computer communications; *also* : accessible via a standard telephone line ⟨a ~ information service⟩
di·al·y·sate \dī-ˈa-lə-ˌzāt, -ˌsāt\ *also* **di·al·y·zate** \-ˌzāt\ *n* (ca. 1867) : the material that passes through the membrane in dialysis; *also* : the liquid into which this material passes
di·al·y·sis \dī-ˈa-lə-səs\ *n, pl* **-y·ses** \-ˌsēz\ [NL, fr. Gk, separation, fr. *dialyein* to dissolve, fr. *dia-* + *lyein* to loosen — more at LOSE] (1861) **1** : the separation of substances in solution by means of their unequal diffusion through semipermeable membranes; *esp* : such a separation of colloids from soluble substances **2** : HEMODIALYSIS — **di·a·lyt·ic** \ˌdī-ə-ˈli-tik\ *adj*
di·a·lyze \ˈdī-ə-ˌlīz\ *vb* **-lyzed; -lyz·ing** *vt* (1861) : to subject to dialysis ~ *vi* : to undergo dialysis — **di·a·lyz·able** \-ˌlī-zə-bəl\ *adj* — **di·a·lyz·er** \-ˌlī-zər\ *n*
dia·mag·net·ic \ˌdī-ə-mag-ˈne-tik\ *adj* (1846) : having a magnetic permeability less than that of a vacuum : slightly repelled by a magnet — **dia·mag·ne·tism** \-ˈmag-nə-ˌti-zəm\ *n*
di·a·man·té \ˌdē-ə-ˌmän-ˈtā\ *n* [F, adj., like a diamond, fr. *diamant* diamond, fr. MF] (1904) : a sparkling decoration (as of sequins) or material decorated with this ⟨a gown trimmed with ~⟩
di·am·e·ter \dī-ˈa-mə-tər\ *n* [ME *diametre*, fr. MF, fr. L *diametros*, fr. Gk, fr. *dia-* + *metron* measure — more at MEASURE] (14c) **1** : a chord passing through the center of a figure or body **2** : the length of a straight line through the center of an object **3** : a unit of magnification for an optical instrument equal to the number of times the linear

dimensions of an object are apparently increased ⟨a microscope magnifying 60 ∼*s*⟩ — **di·am·e·tral** \-'a-mə-trəl\ *adj*
di·a·met·ric \,dī-ə-'me-trik\ *or* **di·a·met·ri·cal** \-tri-kəl\ *adj* (1553) **1** : of, relating to, or constituting a diameter : located at the diameter **2** : completely opposed : being at opposite extremes ⟨in ∼ contradiction to his claims⟩ — **di·a·met·ri·cal·ly** \-tri-k(ə-)lē\ *adv*
di·amide \'dī-ə-,mīd, dī-'a-məd\ *n* (1866) : a compound containing two amido groups
di·amine \'dī-ə-,mēn, dī-'a-mən\ *n* [ISV] (1866) : a compound containing two amino groups
di·am·mo·ni·um phosphate \,dī-ə-'mō-nē-əm-\ *n* (ca. 1929) : a white crystalline compound $(NH_4)_2HPO_4$ used esp. as a fertilizer and as a fire retardant
¹di·a·mond \'dī-(ə-)mənd\ *n, often attrib* [ME *diamaunde*, fr. MF *diamant*, fr. OF, fr. LL *diamant-, diamas*, alter. of L *adamant-, adamas* hardest metal, diamond, fr. Gk] (14c) **1** **a** : native crystalline carbon that is usu. nearly colorless, that when transparent and free from flaws is highly valued as a precious stone, and that is used industrially as an abrasive powder and in rock drills because of its great hardness; *also* : a piece of this substance **b** : crystallized carbon produced artificially **2** : something that resembles a diamond (as in brilliance, value, or fine quality) **3** : a square or rhombus-shaped figure usu. oriented with the long diagonal vertical **4** **a** : a playing card marked with a stylized figure of a red diamond **b** *pl but sing or pl in constr* : the suit comprising cards marked with diamonds **5** : a baseball infield; *also* : the entire playing field
²diamond *vt* (1751) : to adorn with or as if with diamonds
³diamond *adj* (1872) : of, relating to, or being a 60th or 75th anniversary or its celebration ⟨∼ jubilee⟩
di·a·mond·back \'dī-(ə-)mən(d)-,bak\ *adj* (1887) : having marks like diamonds or lozenges on the back
diamondback moth *n* (1891) : a nearly cosmopolitan moth (*Plutella xylostella* of the family Plutellidae) whose larva is a pest on cruciferous plants
diamondback rattlesnake *n* (1894) : either of two large and deadly rattlesnakes (*Crotalus adamanteus* of the southeastern U.S. and *C. atrox* of the south central and southwestern U.S. and Mexico) — called also *diamondback, diamondback rattler*
diamondback terrapin *n* (1887) : any of several terrapins (genus *Malaclemys*) formerly widely distributed in salt marshes along the Atlantic and Gulf coasts but now much restricted
di·a·mond·if·er·ous \,dī-(ə-)mən-'di-fə-rəs\ *adj* (1870) : containing diamonds ⟨∼ earth⟩
diamond in the rough (ca. 1947) : a person of exceptional qualities or potential but lacking refinement or polish
Di·ana \dī-'a-nə\ *n* [L] : an ancient Italian goddess of the forest and of childbirth who was identified with Artemis by the Romans
di·an·thus \dī-'an(t)-thəs\ *n* [NL, genus name, fr. Gk *dios* heavenly + *anthos* flower — more at DEITY, ANTHOLOGY] (1849) : ²PINK 1
di·a·pa·son \,dī-ə-'pā-zᵊn, -sᵊn\ *n* [ME, fr. L, fr. Gk (*hē*) *dia pasōn* (*chordōn symphōnia*), lit., the concord through all the notes, fr. *dia* through + *pasōn*, gen. fem. pl. of *pas* all — more at DIA-, PAN-] (ca. 1501) **1** **a** : a burst of sound ⟨∼*s* of laughter⟩ **b** : the principal foundation stop in the organ extending through the complete range of the instrument **c** (1) : the entire compass of musical tones (2) : RANGE, SCOPE **2** **a** : TUNING FORK **b** : a standard of pitch
dia·pause \'dī-ə-,pȯz\ *n* [Gk *diapausis* pause, fr. *diapauein* to pause, fr. *dia-* + *pauein* to stop] (1893) : a period of physiologically enforced dormancy between periods of activity
dia·paus·ing \-,pȯ-ziŋ\ *adj* (1944) : undergoing diapause
di·a·pe·de·sis \,dī-ə-pə-'dē-səs\ *n, pl* **-de·ses** \-,sēz\ [NL, fr. Gk *diapēdēsis*, lit., act of leaping through, fr. *diapēdan* to leap through, fr. *dia-* + *pēdan* to leap] (1625) : the passage of blood cells through capillary walls into the tissues
¹di·a·per \'dī-pər *also* 'dī-ə-\ *n* [ME *diapre*, fr. MF, fr. ML *diasprum*] (14c) **1** : a fabric with a distinctive pattern: **a** : a rich silk fabric **b** : a soft usu. white linen or cotton fabric used for tablecloths or towels **2** : an allover pattern consisting of one or more small repeated units of design (as geometric figures) connecting with one another or growing out of one another with continuously flowing or straight lines **3** : a basic garment for infants consisting of a folded cloth or other absorbent material drawn up between the legs and fastened about the waist



diaper 2

²diaper *vt* **di·a·pered; di·a·per·ing** \-p(ə-)riŋ\ (14c) **1** : to ornament with diaper designs **2** : to put on or change the diaper of (an infant)
diaper rash *n* : skin irritation of the diaper-covered area of an infant esp. from excessive urinary ammonia
di·a·pha·ne·ity \(,)dī-,a-fə-'nē-ə-tē, ,dī-ə-fə-, -'nā-\ *n* (15c) : the quality or state of being diaphanous
di·aph·a·nous \dī-'a-fə-nəs\ *adj* [ML *diaphanus*, fr. Gk *diaphanēs*, fr. *diaphainein* to show through, fr. *dia-* + *phainein* to show — more at FANCY] (1614) **1** : characterized by such fineness of texture as to permit seeing through **2** : characterized by extreme delicacy of form : ETHEREAL ⟨painted ∼ landscapes⟩ **3** : INSUBSTANTIAL, VAGUE ⟨had only a ∼ hope of success⟩ — **di·aph·a·nous·ly** *adv* — **di·aph·a·nous·ness** *n*
dia·phone \'dī-ə-,fōn\ *n* (1906) : a fog signal similar to a siren but producing a blast of two tones
di·aph·o·rase \dī-'a-fə-,rās, -,rāz\ *n* [ISV *diaphor-* (fr. Gk *diaphoros* different, fr. *diapherein* to differ, fr. *dia-* + *pherein* to carry) + *-ase* — more at BEAR] (1938) : a flavoprotein enzyme capable of oxidizing the reduced form of NAD
di·a·pho·re·sis \,dī-ə-fə-'rē-səs, (,)dī-,a-fə-\ *n, pl* **-re·ses** \-,sēz\ [LL, fr. Gk *diaphorēsis*, fr. *diaphorein* to dissipate by perspiration, fr. *dia-* + *phorein*, freq. of *pherein* to carry] (ca. 1681) : PERSPIRATION; *esp* : profuse perspiration artificially induced
di·a·pho·ret·ic \-'re-tik\ *adj* (15c) : having the power to increase perspiration — **diaphoretic** *n*
di·a·phragm \'dī-ə-,fram\ *n* [ME *diafragma*, fr. LL *diaphragma*, fr. Gk, fr. *diaphrassein* to barricade, fr. *dia-* + *phrassein* to enclose] (14c) **1** : a body partition of muscle and connective tissue; *specif* : the partition separating the chest and abdominal cavities in mammals **2** : a dividing membrane or thin partition esp. in a tube **3** **a** : a more or less rigid partition in the body or shell of an invertebrate **b** : a transverse septum in a plant stem **4** : a device that limits the aperture of a lens or optical system — compare IRIS DIAPHRAGM **5** : a thin flexible disk (as in a microphone or loudspeaker) that vibrates when struck by sound waves or that vibrates to generate sound waves **6** : a molded cap usu. of thin rubber fitted over the uterine cervix to act as a mechanical contraceptive barrier — **di·a·phrag·mat·ic** \,dī-ə-frə(g)-'ma-tik, -,frag-\ *adj* — **di·a·phrag·mat·i·cal·ly** \-'ma-ti-k(ə-)lē\ *adv*
di·aph·y·sis \dī-'a-fə-səs\ *n, pl* **-y·ses** \-,sēz\ [NL, fr. Gk, spinous process of the tibia, fr. *diaphyesthai* to grow between, fr. *dia-* + *phyein* to bring forth — more at BE] (1831) : the shaft of a long bone — **di·aph·y·se·al** \(,)dī-,a-fə-'sē-əl\ *or* **di·a·phys·i·al** \,dī-ə-'fi-zē-əl\ *adj*
di·a·pir \'dī-ə-,pir\ *n* [F, prob. fr. Gk *diapeirein* to drive through, fr. *dia-* + *peirein* to pierce; akin to Gk *poros* passage — more at FARE] (1918) : an anticlinal fold in which a mobile core has broken through brittle overlying rocks — **di·a·pir·ic** \,dī-ə-'pir-ik\ *adj*
dia·pos·i·tive \,dī-ə-'pä-zə-tiv, -'päz-tiv\ *n* (1893) : a positive photographic image on transparent material (as glass or film)
di·ap·sid \dī-'ap-səd\ *adj* [ultim. fr. Gk *di-* + *hapsid-, hapsis* loop, arch — more at APSIS] (ca. 1909) : of, relating to, or including reptiles (as the crocodiles) with two pairs of temporal openings in the skull
di·ar·chy *var of* DYARCHY
di·a·rist \'dī-ə-rəst\ *n* (ca. 1818) : one who keeps a diary
di·ar·rhea \,dī-ə-'rē-ə\ *n* [ME *diaria*, fr. LL *diarrhoea*, fr. Gk *diarrhoia*, fr. *diarrhein* to flow through, fr. *dia-* + *rhein* to flow — more at STREAM] (14c) **1** : abnormally frequent intestinal evacuations with more or less fluid stools **2** : excessive flow ⟨verbal ∼⟩ — **di·ar·rhe·ic** \-'rē-ik\ *adj* — **di·ar·rhe·al** \-'rē-əl\ *adj* — **di·ar·rhet·ic** \-'re-tik\ *adj*
di·ar·rhoea *chiefly Brit var of* DIARRHEA
di·ar·thro·sis \,dī-är-'thrō-səs\ *n, pl* **-thro·ses** \-,sēz\ [NL, fr. Gk *diarthrōsis*, fr. *diarthroun* to joint, fr. *dia-* + *arthroun* to fasten by a joint, fr. *arthron* joint — more at ARTHR-] (1578) **1** : articulation that permits free movement **2** : a freely movable joint
di·a·ry \'dī-(ə-)rē\ *n, pl* **-ries** [L *diarium*, fr. *dies* day — more at DEITY] (1581) **1** : a record of events, transactions, or observations kept daily or at frequent intervals : JOURNAL; *esp* : a daily record of personal activities, reflections, or feelings **2** : a book intended or used for a diary
di·as·po·ra \dī-'as-p(ə-)rə, dē-\ *n* [Gk, dispersion, fr. *diaspeirein* to scatter, fr. *dia-* + *speirein* to sow] (1881) **1** *cap* **a** : the settling of scattered colonies of Jews outside Palestine after the Babylonian exile **b** : the area outside Palestine settled by Jews **c** : the Jews living outside Palestine or modern Israel **2** **a** : the breaking up and scattering of a people : MIGRATION ⟨the black ∼ to northern cities⟩ **b** : people settled far from their ancestral homelands ⟨African ∼⟩ **c** : the place where these people live
di·a·spore \'dī-ə-,spōr, -,spȯr\ *n* [F, fr. Gk *diaspora*] (1805) : a mineral consisting of aluminum hydrogen oxide
di·a·stase \'dī-ə-,stās, -,stāz\ *n* [F, fr. Gk *diastasis* separation, interval, fr. *diistanai* to separate, fr. *dia-* + *histanai* to cause to stand — more at STAND] (1838) **1** : AMYLASE; *esp* : a mixture of amylases from malt **2** : ENZYME
di·a·stat·ic \,dī-ə-'sta-tik\ *adj* (1881) : relating to or having the properties of diastase; *esp* : converting starch into sugar
di·a·ste·ma \,dī-ə-'stē-mə\ *n, pl* **-ma·ta** \-mə-tə\ [NL, fr. LL, interval, fr. Gk *diastēma*, fr. *diistanai*] (1854) : a space between teeth in a jaw
di·a·ste·reo·mer \,dī-ə-'ster-ē-ō-(,)mər, -'stir-\ *or* **di·a·ste·reo·iso·mer** \-,ster-ē-ō-'ī-sə-mər, -,stir-\ *n* (1936) : a stereoisomer of a compound having two or more chiral centers that is not a mirror image of another stereoisomer of the same compound — compare ENANTIOMORPH — **di·a·ste·reo·mer·ic** \-,ster-ē-ō-'mer-ik, -,stir-\ *or* **di·a·ste·reo·iso·mer·ic** \-,ī-sə-'mer-ik\ *adj* — **di·a·ste·reo·isom·er·ism** \-ī-'sä-mə-,ri-zəm\ *n*
di·as·to·le \dī-'as-tə-(,)lē\ *n* [Gk *diastolē* dilatation, fr. *diastellein* to expand, fr. *dia-* + *stellein* to prepare, send] (ca. 1578) : a rhythmically recurrent expansion; *esp* : the dilatation of the cavities of the heart during which they fill with blood — **di·a·stol·ic** \,dī-ə-'stä-lik\ *adj*
di·as·tro·phism \dī-'as-trə-,fi-zəm\ *n* [Gk *diastrophē* twisting, fr. *diastrephein* to distort, fr. *dia-* + *strephein* to twist] (1890) : the process of deformation that produces in the earth's crust its continents and ocean basins, plateaus and mountains, folds of strata, and faults — **di·a·stroph·ic** \,dī-ə-'strä-fik\ *adj* — **di·a·stroph·i·cal·ly** \-fi-k(ə-)lē\ *adv*
di·a·tes·sa·ron \,dī-ə-'te-sə-rən\ *n* [Gk (*Euangelion*) *dia tessarōn*, Gospel out of four, fr. *dia* through, out of + *tessarōn*, gen. of *tessares* four — more at DIA-, FOUR] (1803) : a harmony of the four Gospels edited and arranged into a single connected narrative
dia·ther·ma·nous \,dī-ə-'thər-mə-nəs\ *adj* [F *diathermane*, modif. of Gk *diathermainein* to heat through, fr. *dia-* + *thermainein* to heat, fr. *thermos* hot — more at THERM] (1834) : DIATHERMIC 1
dia·ther·mic \,dī-ə-'thər-mik\ *adj* (1840) **1** : transmitting infrared radiation **2** : of or relating to diathermy ⟨∼ treatment⟩
dia·ther·my \'dī-ə-,thər-mē\ *n* [ISV] (1909) : the generation of heat in tissue by electric currents for medical or surgical purposes
di·ath·e·sis \dī-'a-thə-səs\ *n, pl* **-e·ses** \-,sēz\ [NL, fr. Gk, lit., arrangement, fr. *diatithenai* to arrange, fr. *dia-* + *tithenai* to set — more at DO] (1651) : a constitutional predisposition toward a particular state or condition and esp. one that is abnormal or diseased — **di·a·thet·ic** \,dī-ə-'the-tik\ *adj*
di·a·tom \'dī-ə-,täm\ *n* [ultim. fr. Gk *diatomos* cut in half, fr. *diatemnein* to cut through, fr. *dia-* + *temnein* to cut — more at TOME] (1845) : any of a class (Bacillariophyceae) of minute planktonic unicellular or colonial algae with silicified skeletons that form diatomite
di·a·to·ma·ceous \,dī-ə-tə-'mā-shəs, (,)dī-,a-tə-\ *adj* (1847) : consisting of or abounding in diatoms or their siliceous remains ⟨∼ silica⟩
diatomaceous earth *n* (1883) : DIATOMITE
di·atom·ic \,dī-ə-'tä-mik\ *adj* [ISV] (ca. 1859) : consisting of two atoms : having two atoms in the molecule
di·at·o·mite \dī-'a-tə-,mīt\ *n* (1887) : a light friable siliceous material derived chiefly from diatom remains and used esp. as a filter
dia·ton·ic \,dī-ə-'tä-nik\ *adj* [LL *diatonicus*, fr. Gk *diatonikos*, fr. *diatonos* stretching, fr. *diateinein* to stretch out, fr. *dia-* + *teinein* to stretch — more at THIN] (1694) : of or relating to a major or minor musical scale comprising intervals of five whole ste[ps]
dia·ton·i·cal·ly \-'tä-ni-k(ə-)lē\ *adv*
di·a·tribe \'dī-ə-,trīb\ *n* [L *diatriba*, fr. Gk [...] fr. *diatribein* to spend (time), wear away, fr[...] more at THROW] (1581) **1** *archaic* : a prolon[ged] [...] and abusive speech or writing **3** : ironical o[...]
di·az·e·pam \dī-'a-zə-,pam\ *n* [benzo*diaze*[...] origin)] (ca. 1961) : a tranquilizer $C_{16}H_{13}C$[...] anxiety and tension and as a muscle relaxant
Di·az·i·non \dī-'a-zi-,nän\ *trademark* — [...] inhibiting organophosphate insecticide
di·azo \dī-'a-(,)zō, -'ā-\ *adj* [ISV *diaz-, diazo-*, [...] **1** **a** : relating to or containing the group N_2 c[...] atoms united to a single carbon atom of a[...] used in combination **b** : relating to or cont[...] used in combination **2** : of or relating to a[...] whose production involves the use of a coa[...] that is decomposed by exposure to light
di·a·zo·ni·um \,dī-ə-'zō-nē-əm\ *n* [ISV *di*[...] : the univalent cation $N_2{}^+$ that is compos[...] united to carbon in an organic radical and t[...] in the manufacture of azo dyes
di·az·o·tize \dī-'a-zə-,tīz\ *vt* **-tized; -tiz·ing** [...] + *-ize* — more at AZ-] (ca. 1889) : to con[vert into a] diazo compound (as a diazonium salt) — **di**[...] [...]ā-shən\ *n*
di·ba·sic \(,)dī-'bā-sik\ *adj* (1868) : having [...] atoms — used of acids
dib·ber \'di-bər\ *n* (ca. 1736) : DIBBLE
¹dib·ble \'di-bəl\ *n* [ME *debylle*] (15c) : a s[...] to make holes in the ground for plants, seeds [...]
²dibble *vt* **dib·bled; dib·bling** \'di-b(ə-)liŋ\ [...] dibble **2** : to make holes in (soil) with or as [...]
di·ben·zo·fu·ran \,dī-,ben-zō-'fyu̇-,ran, -fyə[...] toxic chemical compound $C_{12}H_8O$ that is [...] and as an insecticide and is a hazardous p[...] form
dibs \'dibz\ *n pl* [short for *dibstones* (jacks), [...] **1** *slang* : money esp. in small amounts **2** : [...] that piece of cake⟩
di·bu·tyl phthal·ate \,dī-,byü-tᵊl-'tha-,lāt\ [...] (1925) : a colorless oily ester $C_{16}H_{22}O_4$ used [...] [...]izer, pesticide, and repellent (as for chiggers[...]
di·cal·ci·um silicate \(,)dī-'kal-sē-əm-\ *n* [...] $CaO \cdot SiO_2$ that is an essential ingredient of [...]
di·car·box·yl·ic \,dī-,kär-,bäk-'si-lik\ *adj* (c[...] carboxyl groups in the molecule ⟨∼ acids⟩
di·cast \'dī-,kast, 'di-\ *n* [Gk *dikastēs*, fr. [...] judgment — more at DICTION] (1822) : an [...] [...]ing the functions of both judge and juror at [...]
¹dice \'dīs\ *n, pl* **dice** [ME *dyce*, fr. *dees, dy*[...] [...]] (14c) **1** **a** : DIE 1 **b** : a gambling g[...] [...] **dic·es** : a small cubical piece (as of [...] between two racing-car drivers for position [...] of no avail : no use : FUTILE **2** : ¹NO 3 ⟨[...]
²dice *vb* **diced; dic·ing** [ME *dycen*, fr. *dyce*] [...] small cubes **b** : to ornament with square [...] [...] to bring by playing dice ⟨∼ himself into [...] [...] her money away⟩ ∼ *vi* **1** : to play gam[...] [...] the bar —Malcolm Lowry⟩ **2** : to take [...] with death —*Newsweek*⟩ — **dic·er** *n*
di·cen·tric \(,)dī-'sen-trik\ *adj* (1937) : hav[...] [...]mosome⟩ — **dicentric** *n*
dicey \'dī-sē\ *adj* **dic·i·er; -est** [¹*dice* + *-y*] [...] ⟨a ∼ proposition⟩ ⟨∼ weather⟩
[...] *or* **dicho-** *comb form* [LL, fr. Gk, fr. [...] apart ⟨*dicho*gamous⟩
[...]um \dī-'kā-z(h)ē-əm, -zhəm\ *n, pl* [...] [...] halving, fr. *dichazein* to halve, f[...] [...]escence that produces two main axes
[...] *or* **dichloro-** *comb form* : contain[...] [...]methane⟩
[...]ro·ben·zene \(,)dī-,klōr-ə-'ben-,zēn, [...] of three isomeric compounds C_6H_4C[...]
[...]ro·di·flu·o·ro·meth·ane \-,dī-,flu̇r-[...] [...]fluoromethane CCl_2F_2
[...]ro·eth·ane \(,)dī-,klō-rō-'e-,thān\ *n* [...] compound $C_2H_4Cl_2$ that is used chiefl[...]
[...]vos \(')dī-'klōr-,väs, -'klȯr-, -vəs\ *n* [...] (1957) : an organophosphorus in[...] [...]P used esp. in veterinary medicin[...]
[...]my \dī-'kä-gə-mē\ *n, pl* **-mies** [...] [...]gamy] (1862) : the production of m[...] [...] at different times by a hermaphro[...] [...]fertilization — **di·chog·a·mou**[...]
[...] \dī-'kän-drə\ *n* [NL, genus na[...] more at GRIND] (1947) : any of a g[...] perennial herbs of the morning glor[...] [...] or its varieties) used as a gro[...] grasses in warmer parts of the U.S.
[...] \(,)dī-'kō-tik\ *adj* [*dich-* + ²*-oti*[...] [...] to the two ears differently in regar[...] [...] loudness) or a physical aspect ([...] — **di·chot·i·cal·ly** \-ti-k(ə-)lē\ *adv*
[...]mist \dī-'kä-tə-məst *also* də-\ *n* (c[...]
[...]mize \-,mīz\ *vb* **-mized; -miz·in**[...] [...] into two parts, classes, or group[...] — **di·chot·o·mi·za·tion** \-,kä-tə-mə-'z[...]
[...]mous \dī-'kä-tə-məs *also* də-\ *adj* [...] [...]nein to cut — more at TOME] (1[...] [...] relating to, involving, or proceed[...] [...]ly *adv* — **di·chot·o·mous·ne**[...]



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The

Dicti

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gratia] by the grace of God 2 director general
ted bitter 2 doctor of humanities
n [Skt, fr. *dhārayati* he holds; akin to L *firmus*
: an individual's duty fulfilled by observance of
Hinduism & Buddhism a : the basic principle
lual existence : NATURE b : conformity to one's
dhar·mic \-mik\ *adj*
Hebrew letters; doctor of Hebrew literature
:h. fr. Kanarese *tōla* wolf] : a fierce wild dog
) of India that hunts in packs
hoo·tie \'düt-ē\ *n* [Hindi *dhotī*] 1 : a loincloth
n 2 : a fabric used for dhotis
dāwa] : an Arab lateen-rigged boat usu. having
rward, a high poop, and an open waist
ə)l-'hij-(,)ä\ *n* [Ar *Dhū-l-ḥijjah*, lit., the one of
he 12th month of the Muhammadan year — see

:äd-(,)ä\ *n* [Ar *Dhū-l-qa'dah*, lit., the one of the
month of the Muhammadan year — see MONTH

fr. MF, fr. L, fr. Gk; akin to OE *twi-*] 1 : twice
e ⟨*di*chromatic⟩ 2 : containing two atoms
⟨*di*chloride⟩

ME, fr. OF, fr. L, fr. Gk, through, apart, fr. *dia*
rough ⟨*dia*positive⟩ : across ⟨*dia*dromous⟩
is\ *n* [F, fr. Gk *diabasis* act of crossing over, fr.
over, fr. *dia-* + *bainein* to go — more at COME]
E 2 *chiefly Brit* : an altered basalt 3 : a fine
he composition of gabbro but with an ophitic
sic \,dī-ə-'bā-sik\ *adj*
ət-ēz, -'bēt-əs\ *n* [L, fr. Gk *diabētēs*, fr. *diab*
ious abnormal conditions characterized by the
etion of excessive amounts of urine
lus \-in-'sip-əd-əs\ *n* [NL, lit., insipid diabetes]
e pituitary gland characterized by intense thirst
on of large amounts of urine
s \-'mel-ət-əs\ *n* [NL, lit., honey-sweet diabetes]
itutional disorder of carbohydrate metabolism
inadequate secretion or utilization of insulin, by
essive amounts of sugar in the blood and urine
ger, and loss of weight
-'bet-ik\ *adj* 1 : of or relating to diabetes or
ected with diabetes
rson affected with diabetes
-lə-(,)rē, -'ab-\ *n* [F, fr. OF, fr. *diable* devil, fr. LL
at DEVIL] 1 : black magic : SORCERY 2 a :
words or pictures of black magic or of dealings
: demon lore 3 a : mischievous conduct or
quality or state of being wicked
- *comb form* [ME *deabol-*, fr. MF *diabol-*, fr. LL
— more at DEVIL] : devil ⟨*diabol*ism⟩
'bäl-ik\ *or* **di·a·bol·i·cal** \-'bäl-i-kəl\ *adj* [MF
diabolique, fr. LL *diabolicus*, fr. *diabolus*] : of,
aracteristic of the devil : FIENDISH — **di·a·bol**
adv — **di·a·bol·i·cal·ness** \-i-kəl-nəs\ *n*
b-ə-,liz-əm\ *n* 1 : dealings with or possession by
l character or conduct 3 : belief in or worship of
list \-ləst\ *n*
vt **-lized; liz·ing** : to represent as or make diaboli

-ə-'krän-ik\ *adj* : of, relating to, or dealing with
of language as they occur or change over a period
ron·i·cal·ly \-'krän-i-k(ə-)lē\ *adv* — **dia·chron**

ak-rə-nē\ *n* [ISV *dia-* + *-chrony* (as in *synchrony*)]
alysis 2 : change extending through time
-əd\ *or* **di·acid·ic** \,dī-ə-'sid-ik\ *adj* 1 : able to
olecules of a monobasic acid or one of a dibasic
alt or ester — used esp. of bases 2 : containing
ydrogen atoms — used esp. of acid salts
an acid with two acid hydrogen atoms
k-ən-ᵊl, dē-\ *adj* [LL *diaconalis*, fr. *diaconus* deacon
ON] : of or relating to a deacon or deaconess
-ə-nət, -,nāt\ *n* 1 : the office or period of office
eaconess 2 : an official body of deacons
-'krit-ik\ *n* : a modifying mark near or through a
phonetic character or combination of characters
netic value different from that given the unmarked
rked element

DIACRITICS

ute accent	˘	(ŭ)	breve
ve accent	ˇ	(č)	haček
or ~ circumflex	¨	(oö)	diaeresis
le	¸	(ç)	cedilla
cron			

lī-ə-'krit-i-kəl\ *also* **di·a·crit·ic** \-'krit-ik\ *adj* [Gk
rative, fr. *diakrinein* to distinguish, fr. *dia-* + *kr*
— more at CERTAIN] 1 : serving as a diacritic 2
istinguish : DISTINCTIVE ⟨the ~ elements in culture
b : capable of distinguishing ⟨students of superior

,dī-ə-'del-fəs\ *adj* [*di-* + *-adelphous*] : united by
wo fascicles — used of stamens
-,dem, -əd-əm\ *n* [ME *diademe*, fr. OF, fr. L
k *diadēma*, fr. *diadein* to bind around, fr. *dia-* +

to bind; akin to Alb *duai* sheaf, Skt *dāman* rope] 1 : CROWN; : a headband worn as a badge of royalty 2 : regal power or dignity

-dro·mous \dī-'ad-rə-məs\ *adj*, *of a fish* : migratory between salt and fresh waters

-er·e·sis \dī-'er-ə-səs\ *n*, *pl* **-e·ses** \-,sēz\ [LL *diaeresis*, fr. Gk *diairesis*, fr. *diairein* to divide, fr. *dia-* + *hairein* to take] 1 : a mark ¨ placed over a vowel to indicate that the vowel is pronounced in a separate syllable (as in *naïve* or *Brontë*) 2 : the break in a verse caused by the coincidence of the end of a foot with the end of a word — **di·ae·ret·ic** \,dī-ə-'ret-ik\ *adj*

abbr 1 diagonal 2 diagram

-gen·e·sis \,dī-ə-'jen-ə-səs\ *n* [NL] 1 : recombination or rearrangement of constituents (as of a chemical or mineral) resulting in a new product 2 : the conversion (as by compaction or chemical reaction) of sediment into rock — **dia·ge·net·ic** \,dī-ə-jə-'net-ik\ *adj* — **dia·ge·net·i·cal·ly** \-'net-i-k(ə-)lē\ *adv*

-ge·ot·ro·pism \,dī-ə-jē-'ä-trə-,piz-əm\ *or* **dia·ge·ot·ro·py** \-pē\ *n* : the tendency of growing organs (as branches or roots) to extend the axis at right angles to the line of gravity — **dia·geo·tro·pic** \-,jē-ə-'trō-pik, -'träp-ik\ *adj*

-nose \'dī-ig-,nōs, -,nōz, ,dī-ig-', -əg-\ *vb* **-nosed; -nos·ing** [back-formation fr. *diagnosis*] *vt* : to recognize (as a disease) by signs and symptoms ~ *vi* : to make a diagnosis — **di·ag·nos·able** *or* **di·ag·nose·able** \,dī-ig-'nō-sə-bəl, -əg-, -zə-\ *adj*

-no·sis \,dī-ig-'nō-səs, -əg-\ *n*, *pl* **-no·ses** \-,sēz\ [NL, fr. Gk *diagnōsis*, fr. *diagignōskein* to distinguish, fr. *dia-* + *gignōskein* to know — more at KNOW] 1 : the art or act of identifying a disease from its signs and symptoms 2 : a concise technical description of a taxon 3 a : investigation or analysis of the cause or nature of a condition, situation, or problem ⟨~ of engine trouble⟩ b : a statement or conclusion concerning the nature or cause of some phenomenon

-nos·tic \-'näs-tik\ *also* **di·ag·nos·ti·cal** \-ti-kəl\ *adj* : of or relating to diagnosis — **di·ag·nos·ti·cal·ly** \-ti-k(ə-)lē\ *adv*

-gnostic *n* 1 : the art or practice of diagnosis — often used in *pl* 2 : a distinguishing mark — **di·ag·nos·ti·cian** \-(,)näs-'tish-ən\ *n*

-o·nal \dī-'ag-ən-ᵊl, -'ag-nəl\ *adj* [L *diagonalis*, fr. Gk *diagōnios* from angle to angle, fr. *dia-* + *gōnia* angle; akin to Gk *gony* knee — more at KNEE] 1 a : joining two nonadjacent vertices of a rectilinear or polyhedral figure b : passing through two nonadjacent edges of a polyhedron 2 a : inclined obliquely from a reference line (as the vertical) ⟨wood with a ~ grain⟩ b : having diagonal markings or parts ⟨a ~ weave⟩

-gonal *n* 1 : a diagonal straight line or plane 2 a (1) : a diagonal direction (2) : a diagonal row, arrangement, or pattern b : a twilled fabric esp. of wool c : something placed diagonally 3 : a mark / used typically to denote "or" (as in *and/or*), "and or" (as in *straggler/deserter*), or "per" (as in *feet/second*) — called also *solidus*, *virgule*

1, diagonal 1

-o·nal·ize \-,īz\ *vt* **-ized; -iz·ing** : to put (a matrix) in a form with all the nonzero elements along the diagonal from upper left to lower right — **di·ag·o·nal·iz·able** \-,ī-zə-bəl\ *adj* — **di·ag·o·nal·i·za·tion** \-,ag-ən-ᵊl-ə-'zā-shən, -,ag-nə-lə-'zā-\ *n*

-o·nal·ly \dī-'ag-ən-ᵊl-ē, -'ag-nə-lē\ *adv* : in a diagonal manner

-gonal matrix *n* : a matrix that has all the nonzero elements located along the diagonal from upper left to lower right

-gram \'dī-ə-,gram\ *n* [Gk *diagramma*, fr. *diagraphein* to mark out by lines, fr. *dia-* + *graphein* to write — more at CARVE] 1 : a line drawing made for mathematical or scientific purposes 2 a : a graphic design that explains rather than represents b : a drawing that shows arrangement and relations (as of parts) : CHART — **di·a·gram·ma·ble** \-,gram-ə-bəl\ *adj* — **di·a·gram·matic** \,dī-ə-grə-'mat-ik\ *also* **di·a·gram·mat·i·cal** \-'mat-i-kəl\ *adj* — **di·a·gram·mat·i·cal·ly** \-i-k(ə-)lē\ *adv*

-gram *vt* **-gramed** \-,gramd\ *or* **-grammed; -gram·ing** \-,gram-iŋ\ *or* **-gram·ming** : to represent by or put into the form of a diagram

-ki·ne·sis \,dī-ə-kə-'nē-səs, -(,)kī-\ *n*, *pl* **-ne·ses** \-,sēz\ [NL, fr. *dia-* + Gk *kinēsis* motion, fr. *kinein* to move; akin to L *ciēre* to move — more at HIGHT] : the final stage of the meiotic prophase marked by contraction of the bivalents — **dia·ki·net·ic** \-'net-ik\ *adj*

-al \'dī(-ə)l\ *n* [ME, fr. L *dies* day — more at DEITY] 1 : the face of a sundial 2 *obs* : TIMEPIECE 3 : the graduated face of a timepiece 4 a : a face upon which some measurement is registered usu. by means of graduations and a pointer ⟨the thermometer ~ reads 70°F⟩ b : a device (as a disk) that may be operated to make electrical connections or to regulate the operation of a machine and that usu. has guiding marks around its border ⟨a radio ~⟩ ⟨a telephone ~⟩

-al *vb* **di·aled** *or* **di·alled; di·al·ing** *or* **di·al·ling** *vt* 1 : to measure with a dial 2 : to manipulate a device (as a dial) so as to operate, regulate, or select ⟨~ your favorite program⟩ ⟨he ~*ed* the wrong number⟩ ~ *vi* 1 : to manipulate a dial 2 : to make a call on a dial telephone — **di·al·er** *n*

abbr 1 dialect 2 dialectical

-lect \'dī-ə-,lekt\ *n*, *often attrib* [MF *dialecte*, fr. L *dialectus*, fr. Gk *dialektos* conversation, dialect, fr. *dialegesthai* to converse — more at DIALOGUE] 1 a : a regional variety of language distinguished by features of vocabulary, grammar, and pronunciation from other regional varieties and constituting together with them a single language of which no one variety is construed as standard ⟨the Doric ~ of ancient Greek⟩ b : one of two or more cognate languages ⟨French and Italian are Romance ~*s*⟩ c : a regional variety of a language usu. transmitted orally and differing distinctively from the standard language ⟨the Lancashire ~ of English⟩ d : a variety of a language used by the members of an occupational group ⟨the ~ of the atomic physicist⟩ e : a variety of language whose identity is fixed by a factor (as social class or educational level of its habitual users) other than geography ⟨spoke a rough peasant ~⟩ 2 : manner or means of expressing oneself : PHRASEOLOGY — **di·a·lec·tal** \,dī-ə-'lek-tᵊl\ *adj* — **di·a·lec·tal·ly** \-tᵊl-ē\ *adv*

syn DIALECT, VERNACULAR, LINGO, JARGON, CANT, ARGOT, SLANG *shared meaning element* : a form of language that is not recognized as standard

dialect atlas *n* : LINGUISTIC ATLAS

dialect geography *n* : LINGUISTIC GEOGRAPHY

di·a·lec·tic \,dī-ə-'lek-tik\ *n* [ME *dialetik*, fr. MF *dialetique*, fr. L *dialectica*, fr. Gk *dialektikē*, fr. fem. of *dialektikos* of conversation, fr. *dialektos*] 1 a : discussion and reasoning by dialogue as a method of intellectual investigation; *specif* : the Socratic techniques of exposing false beliefs and eliciting truth b : the Platonic investigation of the eternal ideas 2 : LOGIC 1a(1) 3 : the logic of fallacy 4 a : the Hegelian process of change in which a concept or its realization passes over into and is preserved and fulfilled by its opposite; *also* : the critical investigation of this process b (1) *usu pl but sing or pl in constr* : development through the stages of thesis, antithesis, and synthesis in accordance with the laws of dialectical materialism (2) : the investigation of this process (3) : the theoretical application of this process esp. in the social sciences 5 *usu pl but sing or pl in constr* a : any systematic reasoning, exposition, or argument that juxtaposes opposed or contradictory ideas and usu. seeks to resolve their conflict b : an intellectual exchange of ideas 6 : the dialectical tension or opposition between two interacting forces or elements

di·a·lec·ti·cal \,dī-ə-'lek-ti-kəl\ *also* **di·a·lec·tic** \-tik\ *adj* 1 a : of, relating to, or in accordance with dialectic ⟨~ method⟩ b : practicing, devoted to, or employing dialectic ⟨a ~ philosopher⟩ 2 : of, relating to, or characteristic of a dialect — **di·a·lec·ti·cal·ly** \-ti-k(ə-)lē\ *adv*

dialectical materialism *n* : the Marxian theory that maintains the material basis of a reality constantly changing in a dialectical process and the priority of matter over mind — compare HISTORICAL MATERIALISM

di·a·lec·ti·cian \,dī-ə-,lek-'tish-ən\ *n* 1 : one who is skilled in or practices dialectic 2 : a student of dialects

di·a·lec·tol·o·gist \-'täl-ə-jəst\ *n* : a specialist in dialectology

di·a·lec·tol·o·gy \-jē\ *n* [ISV] 1 : the systematic study of dialect 2 : the body of data available for study of a dialect — **di·a·lec·to·log·i·cal** \-,lek-tə-'läj-i-kəl\ *adj* — **di·a·lec·to·log·i·cal·ly** \-k(ə-)lē\ *adv*

di·al·lel \'dī-ə-,lel\ *adj* [Gk *diallēlos* reciprocating, confused, fr. *di'allēlōn* through or across one another] : relating to or being the crossing of each of several individuals with two or more others in order to determine the relative genetic contribution of each parent to certain characters in the offspring

di·a·log·ic \,dī-ə-'läj-ik\ *adj* : of, relating to, or characterized by dialogue ⟨~ writing⟩ — **di·a·log·i·cal** \-'läj-i-kəl\ *adj* — **di·a·log·i·cal·ly** \-i-k(ə-)lē\ *adv*

di·a·lo·gist \dī-'al-ə-jəst; 'dī-ə-,lȯg-əst, -,läg-\ *n* 1 : one who participates in a dialogue 2 : a writer of dialogues — **di·a·lo·gis·tic** \(,)dī-,al-ə-'jis-tik; ,dī-ə-,lȯ-'gis-, -,lä-'gis-\ *adj*

[1]**di·a·logue** *or* **di·a·log** \'dī-ə-,lȯg, -,läg\ *n* [MF, fr. OF, fr. L *dialogus*, fr. Gk *dialogos*, fr. *dialegesthai* to converse, fr. *dia-* + *legein* to speak] 1 : a written composition in which two or more characters are represented as conversing 2 a : a conversation between two or more persons; *also* : a similar exchange between a person and something else (as a computer) b : an exchange of ideas and opinions 3 : the conversational element of literary or dramatic composition 4 : a musical composition for two or more parts suggestive of a conversation

[2]**dialogue** *vb* **-logued; -logu·ing** *vi* : to take part in a dialogue ~ *vt* : to express in dialogue

dial tone *n* : a tone emitted by a telephone as a signal that the system is ready for dialing

di·al·y·sate \dī-'al-ə-,zāt, -,sāt\ *or* **di·al·y·zate** \-,zāt\ *n* [*dialysis* or *dialyze* + *-ate*] : the material that passes through the membrane in dialysis; *also* : the liquid into which this material passes

di·al·y·sis \dī-'al-ə-səs\ *n*, *pl* **-y·ses** \-,sēz\ [NL, fr. Gk, separation, fr. *dialyein* to dissolve, fr. *dia-* + *lyein* to loosen — more at LOSE] : the separation of substances in solution by means of their unequal diffusion through semipermeable membranes; *esp* : such a separation of colloids from soluble substances — **di·a·lyt·ic** \,dī-ə-'lit-ik\ *adj*

di·a·lyze \'dī-ə-,līz\ *vb* **-lyzed; -lyz·ing** *vt* : to subject to dialysis ~ *vi* : to undergo dialysis — **di·a·lyz·abil·i·ty** \,dī-ə-,lī-zə-'bil-ət-ē\ *n* — **di·a·lyz·able** \'dī-ə-,lī-zə-bəl\ *adj* — **di·a·lyz·er** \-,lī-zər\ *n*

diam *abbr* diameter

dia·mag·net \'dī-ə-,mag-nət\ *or* **dia·mag·net·ic** \,dī-ə-mag-'net-ik\ *n* [*diamagnet* back-formation fr. *diamagnetic*, adj.] : a diamagnetic substance

diamagnetic *adj* : having a magnetic permeability less than that of a vacuum : slightly repelled by a magnet — **dia·mag·ne·tism** \-'mag-nə-,tiz-əm\ *n*

di·am·e·ter \dī-'am-ət-ər\ *n* [ME *diametre*, fr. MF, fr. L *diametros*, fr. Gk, fr. *dia-* + *metron* measure — more at MEASURE] 1 : a chord passing through the center of a figure or body 2 : the length of a straight line through the center of an object 3 : a unit of magnification of observations with a magnifying device equal to the number of times the linear dimensions of the object are increased ⟨a microscope magnifying 60 ~*s*⟩ — **di·am·e·tral** \-'am-ə-trəl\ *adj*

di·a·met·ric \,dī-ə-'me-trik\ *or* **di·a·met·ri·cal** \-tri-kəl\ *adj* 1 : of, relating to, or constituting a diameter : located at the diameter 2